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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/607,789	06/30/2000	Kyeong-Jun Kim	678-506 (P9382)	1168

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EXAMINER	
CHOW, CHARLES CHIANG	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/607,789	KIM ET AL.	
	Examiner	Art Unit	
	Charles Chow	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Office Action for RCE
Received on Januray/10/2005

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1-2, 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (US 6,615,026 B1) in view of Chatzipetros (US 5,554,996).

Regarding **claim 1**, Wong teaches a portable radio terminal apparatus including a terminal body (Fig. 1, body of a portable telephone 10) and an antenna (12), wherein said portable radio terminal's overall length is less than ½ wavelength (the increasing of dielectric constant to a value of 100 can reduce the effective ¼ wavelength by 10 times, from 7.5 cm to 0.75 cm; col. 3, lines 1-20, for the reducing the portable telephone's overall length by 10 times less than the free space ½ wavelength). Wong teaches the wherein the magnitude of electromagnetic radiation emitted from the peak current distribution point in the vicinity of the terminal body (arrowed "x" in Fig. 1; the peak radiation from antenna 12, Fig. 1) is minimized so that the pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped (the maxim reflecting the radiated energy away from user's head, abstract; the radiation pattern is reshaped by metallic surface 14 located inside the portable telephone 10, col. 2, lines 54-57; col. 3, lines 26-40) in such a way so as to reduce the influence of electromagnetic waves upon a user's head (the directing, reflecting, radiation

energy away from user's head, abstract, col. 2, lines 14-20). Wong fails to teach a portable radio terminal comprising a conductor connected a printed circuit board disposed within the terminal body such that an electrical equivalent length of the portable radio terminal is 1/2 wavelength, thereby shifting a peak current distribution point and reducing the peak current radiated from the peak current distribution point. However, Chatzipetros teaches these features, a conductor 116 located in flap 104 of handset 100, Fig. 1, is connected to a printed circuit board 206 via direct feed 202 (Fig. 2, col. 2, lines 46-61), the direct feed portion 202 can be in increments of quarter wavelength, col. 3, lines 13-21, such that the electrical length of the radio handset 100 is 1/2 wavelength.

Chatzipetros teaches the thereby shifting a peak current distribution point and reducing the peak current radiated from the peak current distribution point (the shifting of the antenna peak current radiation by adding direct feed 202, col. 2, lines 46-61; to reducing the antenna peak current radiation from the peak current point having radiated signal level notches at 504, 506, Fig. 5, from radiated signal level in Fig. 3, col. 4, lines 29-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wong's antenna with Chatzipetros' antenna, such that the antenna radiation level could be reduced at a location near use's head.

Regarding **claim 2**, Wong teaches the conductor comprising a flat conductive board (the flat metallic 14 in Fig. 1).

Regarding **claim 6**, Wong teaches a portable radio terminal apparatus including a terminal body (Fig. 1, body of portable telephone 10), an antenna (12), the wherein the magnitude of electromagnetic radiation emitted from the peak current distribution point in the vicinity of

the terminal body (arrowed "x" in Fig. 1; the peak radiation from antenna 12, Fig. 1) is minimized so that the pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped (the maxim reflecting the radiated energy away from user's head, abstract; the radiation pattern is reshaped by metallic surface 14 located inside the portable telephone 10, col. 2, lines 54-57; col. 3, lines 26-40) in such a way so as to reduce the influence of electromagnetic waves upon a user's head (the directing, reflecting, radiation energy away from user's head, abstract, col. 2, lines 14-20). Wong fails to teach the portable radio terminal comprising a flip, a conductor integrated with the flip so that an equivalent ground length formed by terminal body, the antenna and flip is longer than 1/4 wavelength. However, Chatzipetros teaches the flip (104) having antenna 116 interconnected with the direct feed 202 (Fig.2), the direct feed 202 can have incrementing electrical wavelength of one quarter wavelength (col. 3, lines 13-21), so that by adding the direct feed 202, it can make the equivalent ground length formed by radio handset 100, antenna and flap 104 longer than 1/4 wavelength, by incrementing 202 in quarter wavelength. Chatzipetros teaches the thereby shifting a peak current distribution point and reducing the peak current radiated from the peak current distribution point (the shifting of the antenna peak current radiation by adding direct feed 202, col. 2, lines 46-61; to reducing the antenna peak current radiation from the peak current point having radiated signal level notches at 504, 506, Fig. 5, from radiated signal level in Fig. 3, col. 4, lines 29-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wong's antenna with Chatzipetros' antenna, such that the antenna radiation level could be reduced at a location near use's head.

Regarding **claim 7**, Chatzipetros taught above the conductive is inserted within a flip, by imbedding the conductive material into the plastic flap 104 (col. 2, lines 34-40).

Regarding **claim 8**, Chatzipetros taught above the conductive paint for the parasitic radiator 116 (col. 2, lines 62-67) for applicant's claimed conductive pigments.

Regarding **claim 9**, Chatzipetros taught above the parasitic radiator 116 is a conductive copper sticker tape to flap 104 (col. 2, lines 62-67).

Regarding **claim 10**, Wong teaches a portable radio terminal apparatus including a terminal body (Fig. 1, body of portable telephone 10), an antenna (12), the wherein the magnitude of electromagnetic radiation emitted from the peak current distribution point in the vicinity of the terminal body (arrowed "x" in Fig. 1; the peak radiation from antenna 12, Fig. 1) is minimized so that the pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped (the maxim reflecting the radiated energy away from user's head, abstract; the radiation pattern is reshaped by metallic surface 14 located inside the portable telephone 10, col. 2, lines 54-57; col. 3, lines 26-40) in such a way so as to reduce the influence of electromagnetic waves upon a user's head (the directing, reflecting, radiation energy away from user's head, abstract, col. 2, lines 14-20). Wong fails to teach the portable radio terminal comprising a flip, a conductor integrated with the flip so that an equivalent ground length formed by terminal body, the antenna and flip is 1/2 wavelength. However, Chatzipetros teaches the flip (104) having antenna 116 interconnected with the direct feed 202 (Fig.2), the direct feed 202 can have incrementing electrical wavelength of one quarter wavelength (col. 3, lines 13-21), so that by adding the direct feed 202, it can make the equivalent ground length formed by radio handset 100, antenna and flap 104 to be 1/2

wavelength, by incrementing 202 in quarter wavelength. Chatzipetros teaches the thereby shifting a peak current distribution point and reducing the peak current radiated from the peak current distribution point (the shifting of the antenna peak current radiation by adding direct feed 202, col. 2, lines 46-61; to reducing the antenna peak current radiation from the peak current point having radiated signal level notches at 504, 506, Fig. 5, from radiated signal level in Fig. 3, col. 4, lines 29-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wong's antenna with Chatzipetros' antenna, such that the antenna radiation level could be reduced at a location near use's head.

2. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Chatzipetros, as applied to claim 1 above, and further in view of Phillips et al. (US 5,572,223).

Regarding **claim 3**, Wong and Chatzipetros fail to teach the strip line. However, Phillips teaches the parasitic radiator 1668 is a thin conducive element on the dielectric 1667 having ground plane 1666 (col. 8, lines 39-54). The thin conductive element on the dielectric layer having ground is applicant's claimed strip line. Phillips teaches the conductor connected to the printed circuit board for high antenna performance (In Fig. 23, the patch radiator 1601 is a conductor which is connected to the board 314 through ground pins 1969, at the ground plane 1666; col. 8, lines 41-43; col. 8, line 62 to col. 9, line 9), the different shaped parasitic radiators (Fig. 7-12) which couples to the flap antenna for high antenna performance for a small pocket size antenna (abstract, col. 1, lines 26-31; col. 1, line 65 to col. 2, line 2; col. 7, lines 36-52; col. 3, lines 29-43; and in his claim 1). Phillips teaches the technique for high

performance small antenna having parasitic radiator connected to board 314, such that the antenna performance could be improved with parasitic radiator. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wong, Chatzipetros, with Phillips' parasitic radiator connected to the board, to Takei as modified above, such that the antenna performance could be improved with parasitic radiator.

Regarding **claim 4**, Phillips teaches the conductor extending in a straight line from board 314 via ground pins 1969, as shown in Fig. 23, the quarter wavelength parasitic patch radiator 1601 which is a straight line. Phillips also teaches the straight line in Fig. 19, Fig. 20.

Regarding **claim 5**, Phillips teaches the closed loop conductor 1200 in Fig. 12, col. 7, lines 36-52.

Response to Arguments

3. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument for the no teachings for the wherein the magnitude of electromagnetic radiation emitted from the peak current distribution point in the vicinity of the terminal body is minimized so that the pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped in such a way so as to reduce the influence of electromagnetic waves upon a user's head, the ground of rejection has been change to include Wong (US 6,615,026 B1). Wong teaches the peak current radiation point at the arrowed "x" from antenna 12 in Fig. 1, the maxim reflecting the radiated energy away from user's head, abstract; the radiation pattern is reshaped by metallic surface 14 located inside the portable telephone 10 (col. 2, lines 54-57; col. 3, lines 26-40; so as to reduce radiation

upon user's head by directing, reflecting, radiation energy away from user's head, abstract, col. 2, lines 14-20).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (703)-306-5615. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (703)-305-4385.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Charles Chow C.C.

February 2, 2005.

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600